TITLE: **SEGMENTING CACHE TO PROVIDE VARYING SERVICE LEVELS**

Inventors: Daniel Lambright, et al.
Serial No.: To be assigned   Filed: March 2, 2004   EMS-00503
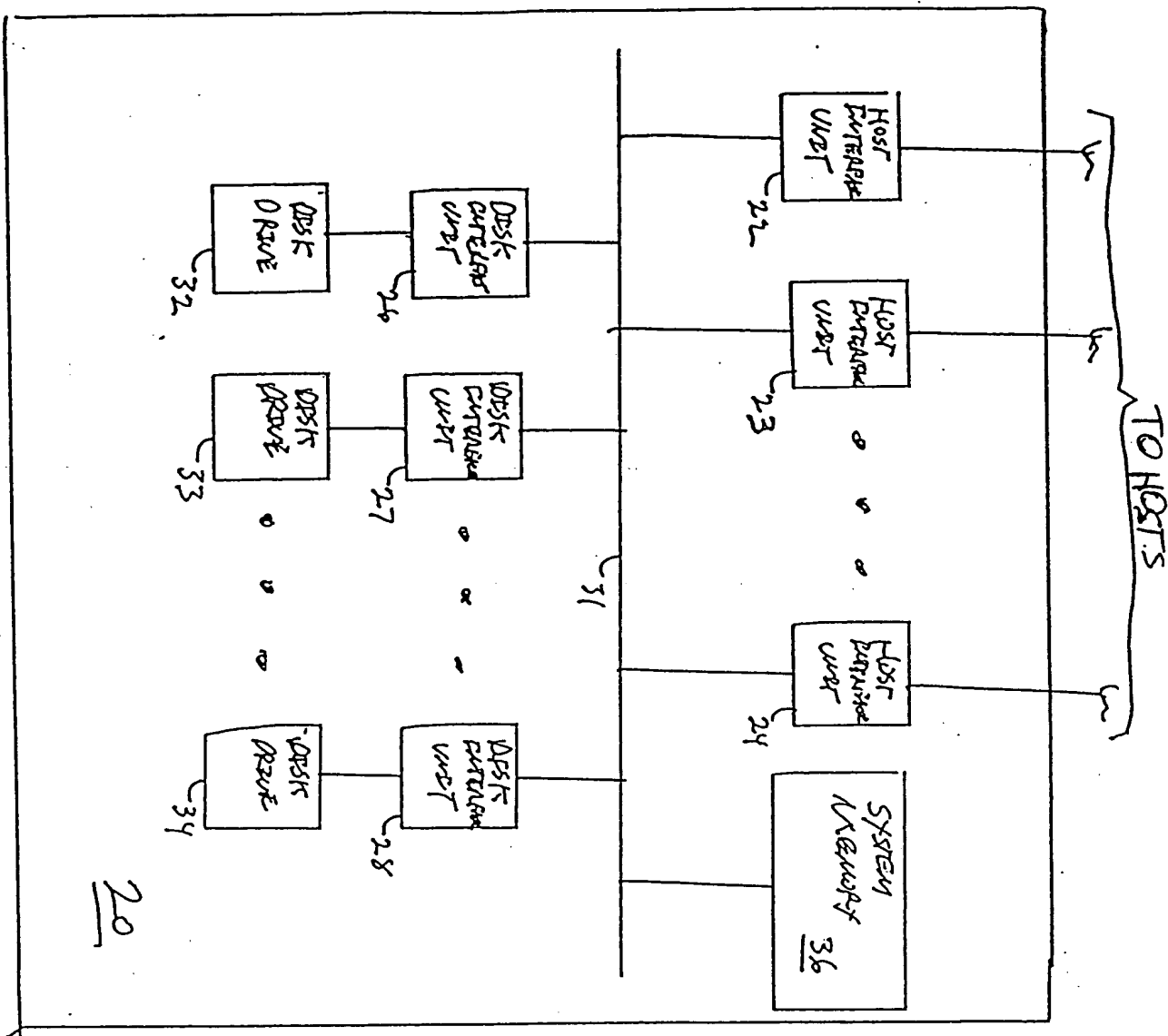Agent: Anne E. Saturnelli   Reg. No.: 41,290   **Sheet 1 of 9**

FIG. 1

FIG. 2

TITLE: **SEGMENTING CACHE TO PROVIDE VARYING**
SERVICE LEVELS
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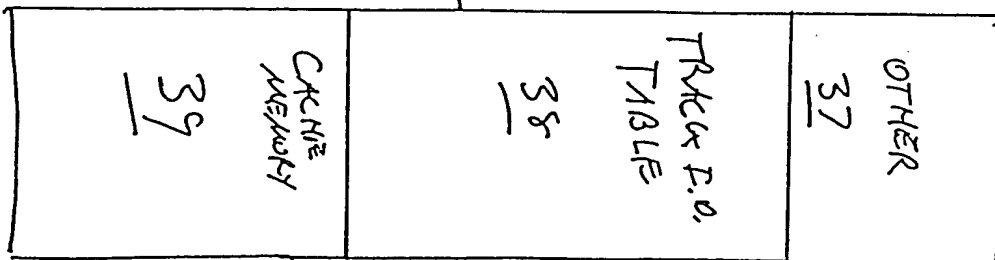Agent: Anne E. Saturnelli   Reg. No.: 41,290   **Sheet 2 of 9**

FIG. 3

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Agent: Anne E. Saturnelli   Reg. No.: 41,290   **Sheet 3 of 9**

FIG. 4A

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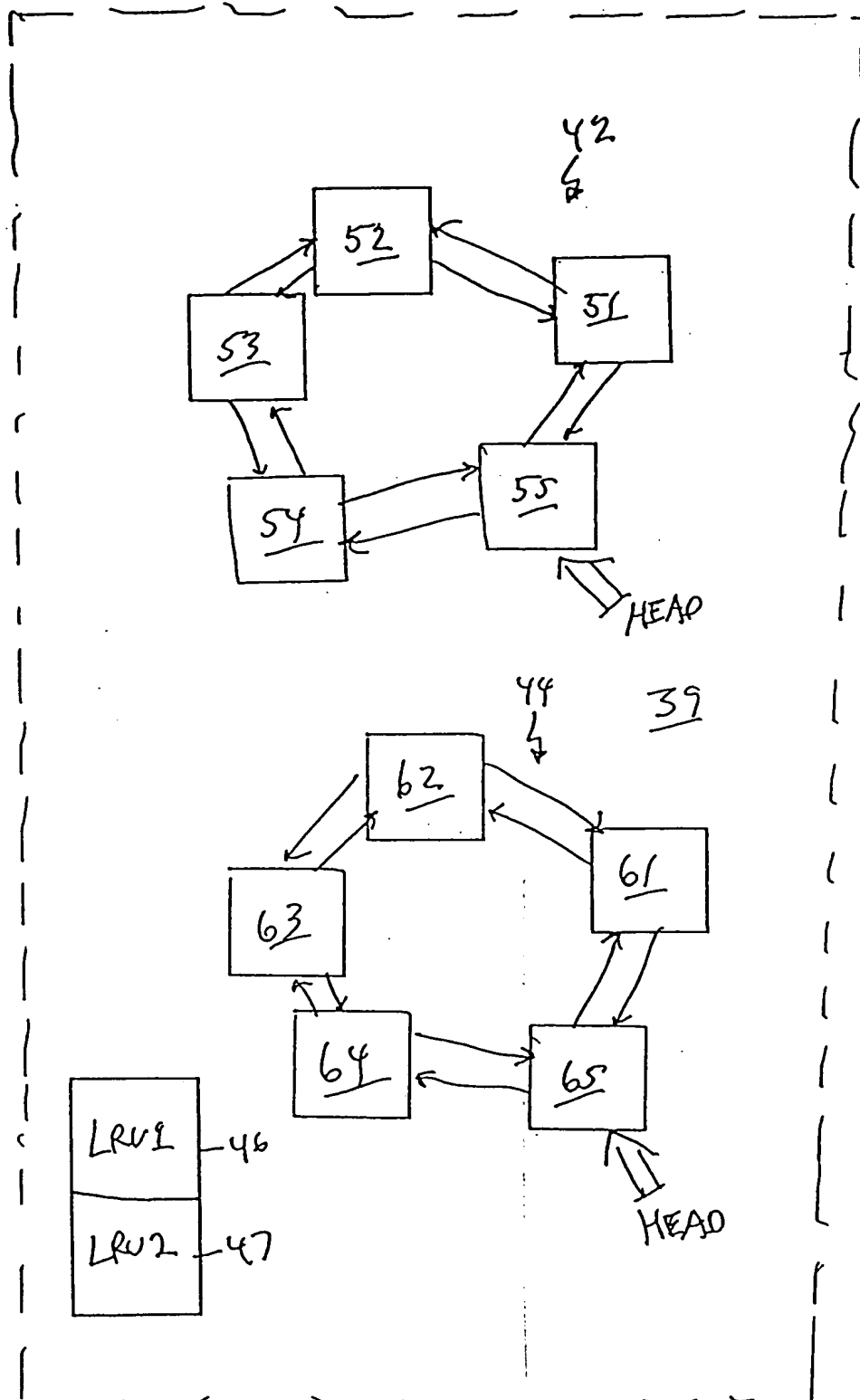Agent: Anne E. Saturnelli   Reg. No.: 41,290   **Sheet 4 of 9**

42

52   37

53   55

54   62

HEAD

39

44

61

63   65

64

HEAD

| LRU1 | —46 |
| LRU 2 | —47 |

FIG. 4B

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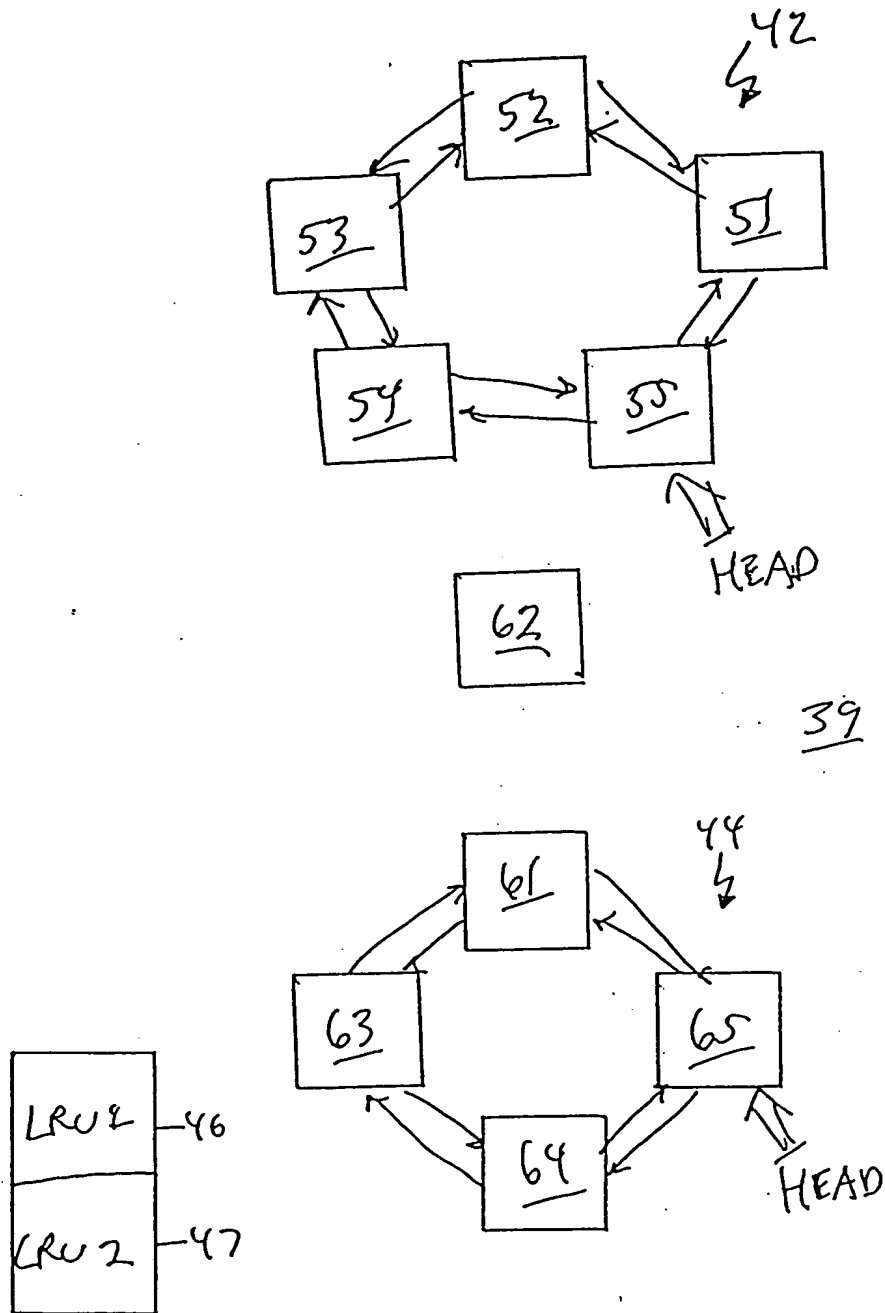Agent: Anne E. Saturnelli   Reg. No.: 41,290   **Sheet 5 of 9**

START

CALCULATE FALL THROUGH TIMES — 72

70

CALCULATE DELTA — 74

DELTA > THRESH? — 76

NO → ASSIGN RANDOMLY — 78 → DONE

ASSIGN TO SMALLER — 79 → DONE

FIG. 5

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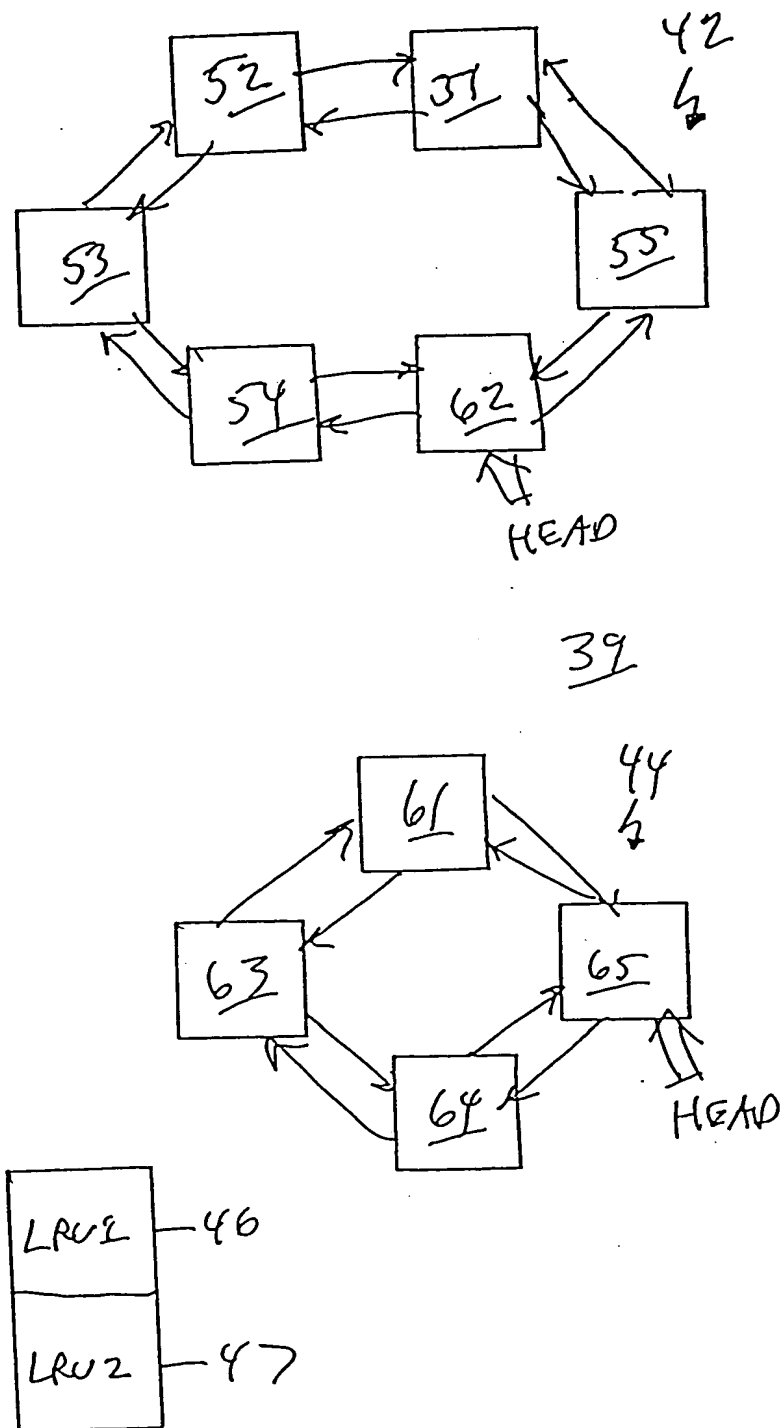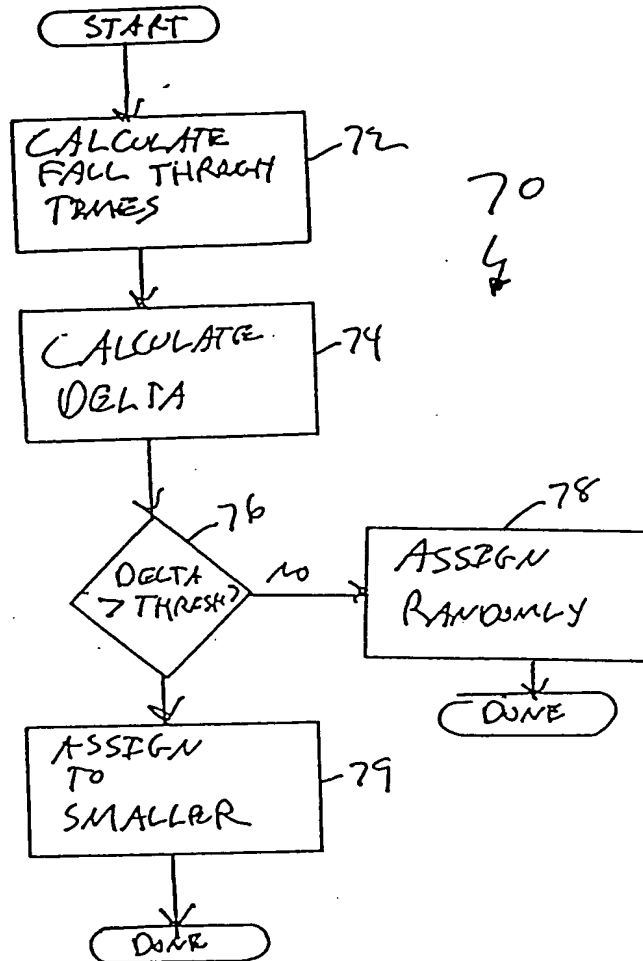Agent: Anne E. Saturnelli   Reg. No.: 41,290   **Sheet 6 of 9**

102
104
106
107
108
110
111
112
100

FIG. 6

GROUP	LRU Mask
1	1 1 1 0 0 0 0 0
2	0 0 0 1 1 0 0 0
3	0 0 0 0 0 1 1 0
4	0 0 0 0 0 0 0 1

120

FIG. 7

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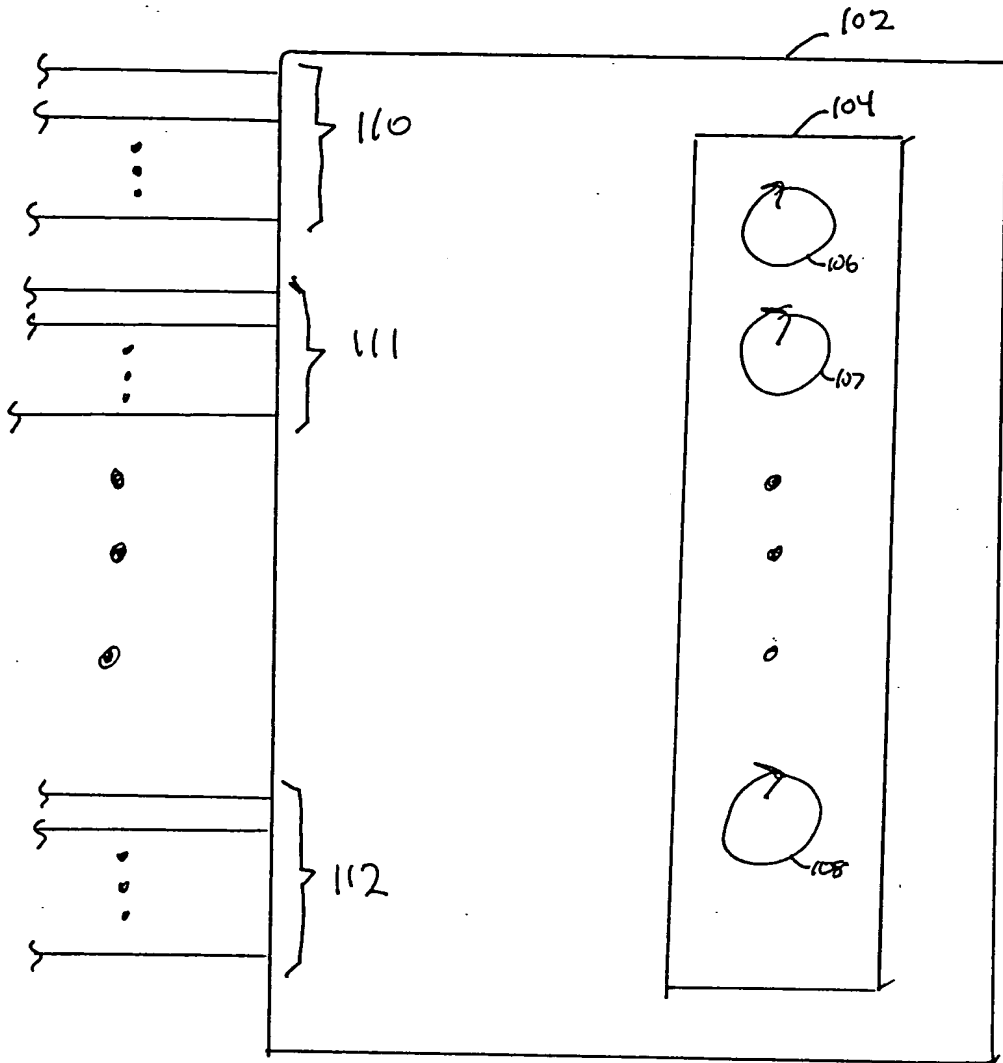Agent: Anne E. Saturnelli   Reg. No.: 41,290   **Sheet 7 of 9**

(START)

OBTAIN GROUP NUMBER — 132

130

GET LRU MASK — 134

OBTAIN MATCHING SLOT — 136

AVAIL? — 138 — NO → OBTAIN ALTERNATIVE SLOT — 140

YES

(DONE)

(DONE)

FIG. 8

TITLE: **SEGMENTING CACHE TO PROVIDE VARYING**
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Inventors: Daniel Lambright, et al.
Serial No.: To be assigned   Filed: March 2, 2004   EMS-00503
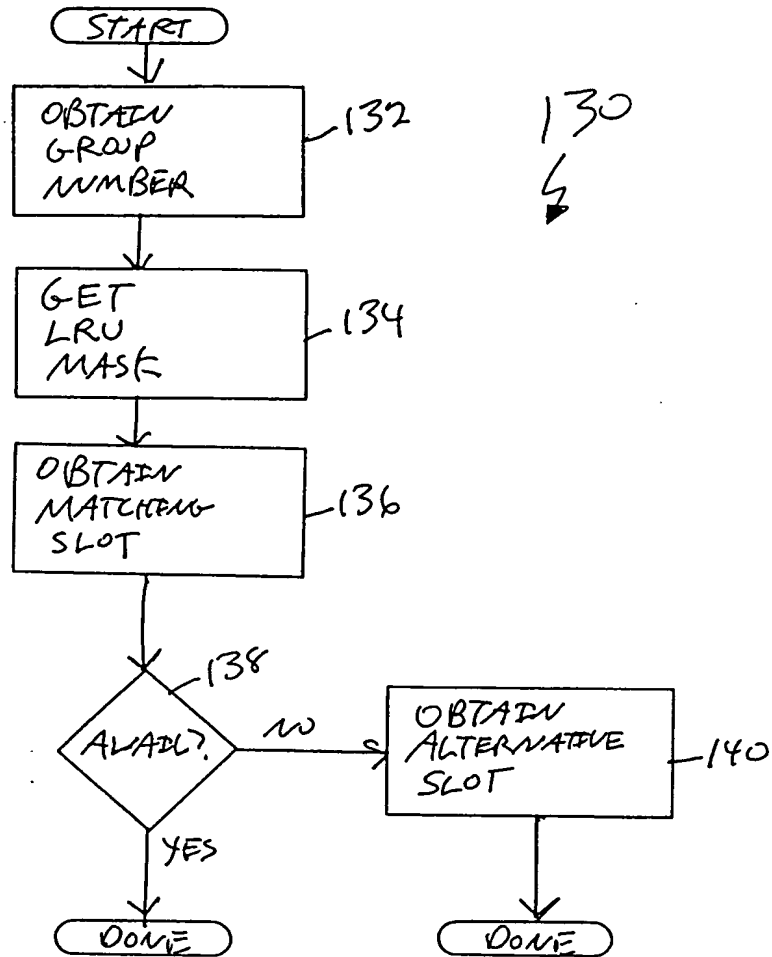Agent: Anne E. Saturnelli   Reg. No.: 41,290   **Sheet 8 of 9**

START

OBTAIN FIRST LRU POINTER — 152

150

POINT TO FIRST SLOT — 154

SLOT AVAIL? — 156
YES → RETURN SLOT NO — 158 → DONE
NO ↓

MORE SLOTS? — 160
NO → MORE LRU'S — 164
NO → RETURN -1 — 166 → DONE
YES ↓

POINT TO NEXT SLOT — 162

MORE LRU'S — 164
YES → OBTAIN NEXT LRU POINTER — 168

FIG. 9

TITLE: **SEGMENTING CACHE TO PROVIDE VARYING SERVICE LEVELS**
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Serial No.: To be assigned   Filed: March 2, 2004   EMS-00503
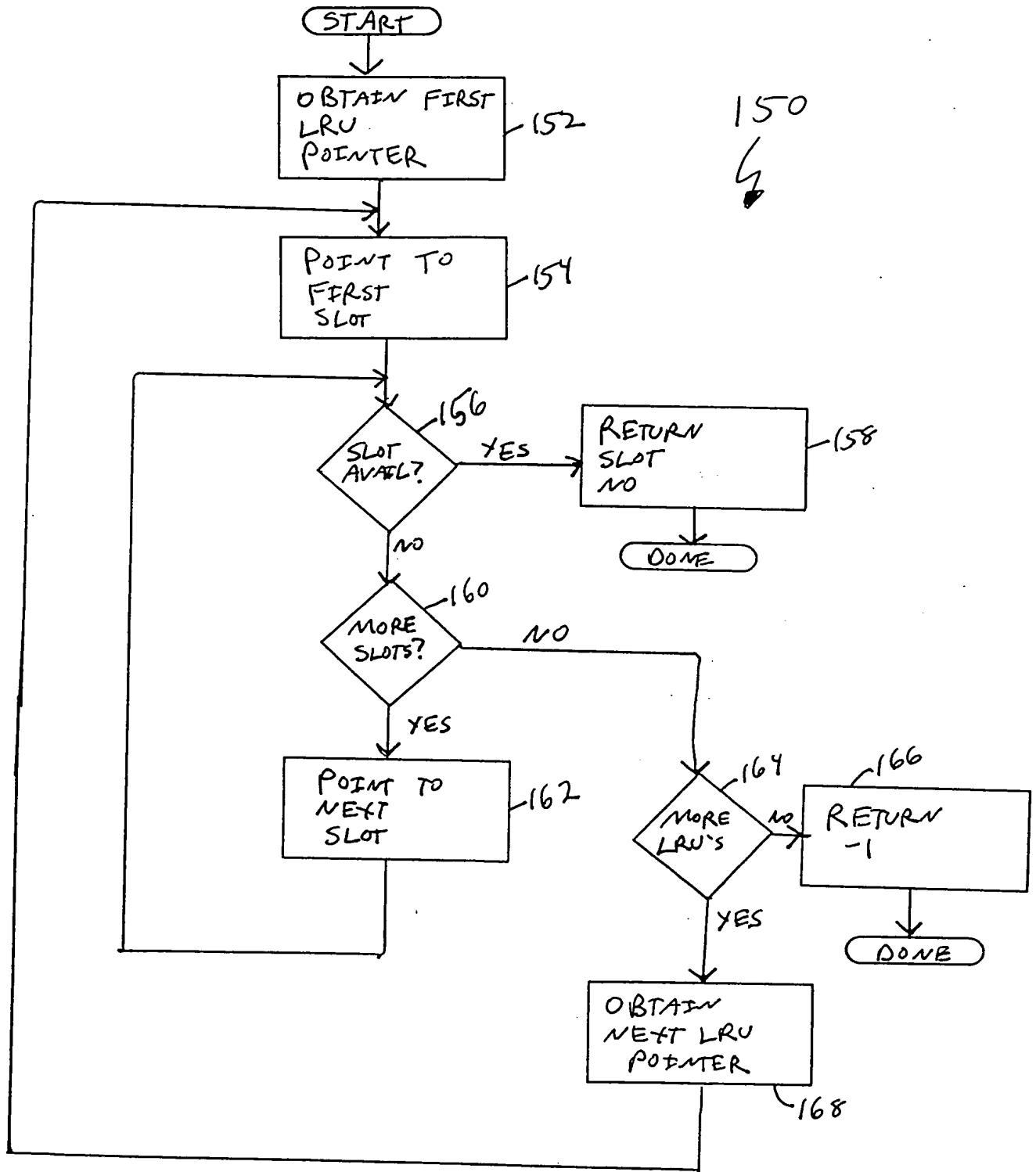Agent: Anne E. Saturnelli   Reg. No.: 41,290   **Sheet 9 of 9**

SLOT #	LRU
0	1
1	1
2	2
3	2
4	2
5	2
6	3
7	4
8	4
9	4
10	4
11	4
12	4

170

FIG. 10